EDISON

CASI Pharmaceuticals

Regulatory update

Evomela approved in China

Pharma & biotech

CASI announced that it has received approval in China for Evomela. The drug is a formulation of melphalan hydrochloride used in the treatment of multiple myeloma, and CASI obtained the rights to the drug in Greater China from its original developer, Spectrum Pharmaceuticals, in 2014. This put CASI in a unique position to take advantage of the regulatory reforms in China. The drug was approved under the new priority review pathway at the National Medical Products Administration (NMPA, formerly the CFDA) and serves as a test case for this new regulatory regime.

Year end	Revenue ($m)	PBT* ($m)	EPS* ($)	DPS ($)	P/E (x)	Yield (%)
12/16	0.0	(6.5)	(0.12)	0.0	N/A	N/A
12/17	0.0	(10.1)	(0.16)	0.0	N/A	N/A
12/18e	0.0	(18.8)	(0.23)	0.0	N/A	N/A
12/19e	10.9	(14.3)	(0.15)	0.0	N/A	N/A

Note: *PBT and EPS are normalised, excluding amortisation of acquired intangibles, exceptional items and share-based payments.

Approved for the same indications as in the US

Evomela was approved by the NMPA for the use as a conditioning agent prior to stem cell transplant and for palliative treatment for multiple myeloma patients who cannot take oral drugs, with the former being the primary commercial driver. Conditioning is the treatment of a patient with high doses of chemotherapy to remove their native stem cells (and cancer) prior to replacement with a transplant, and is common in the treatment of multiple myeloma. The drug is approved for the same indications in the US, and Spectrum reported sales of $6.8m for Q318.

Multiple myeloma: A significant burden

There is uncertainty about the precise estimates of the rate of multiple myeloma in China, but it is understood that it is rarer (along with other hematologic malignancies) in China than in the US. Estimates of the incidence rate are approximately one per 100,000 compared with seven per 100,000 in the US (on an age adjusted bases). However, given the substantially larger population, it is estimated to have the second highest number of patients after the US with ~17,000.

A successful test of the new priority review pathway

CASI sought approval of Evomela through a previously untested pathway. The regulatory authorities in China recently underwent a series of reforms aimed at increasing the number of foreign drugs approved, which included instituting a priority review pathway for select set of drugs. Evomela qualified for this pathway because it would be the first formulation of melphalan approved in China. This allowed it to be approved with its existing data package and without the need for confirmatory Chinese trials.

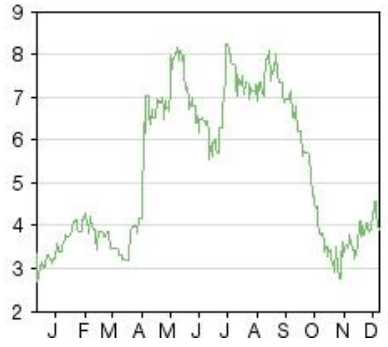
Valuation: Increased to $759m or $8.11

We have increased our valuation to $759m or $8.11 per basic share from $754m or $8.06 per basic share. This reflects the approval; the increase is relatively small given that most of the decision was already priced in given our high level of confidence.

10 December 2018

Price	**US$3.90**
Market cap	**US$365m**
Net cash ($m) at Q318	98.5
Shares in issue	93.6m
Free float	47.4
Code	CASI
Primary exchange	NASDAQ
Secondary exchange	N/A

Share price performance



%	1m	3m	12m
Abs	2.9	(40.2)	18.9
Rel (local)	10.0	(34.8)	19.1
52-week high/low		US$8.2	US$2.7

Business description

CASI is a pharmaceutical company that has acquired or licensed a series of drugs that it intends to market in China. These include proprietary drugs licensed from Spectrum Pharmaceuticals and a portfolio of ANDAs. The goal is to seek approval through new pathways that have been opened in the quickly changing Chinese regulatory environment.

Next events

Marqibo and Zevalin CTAs	Upcoming

Analyst

Nathaniel Calloway +1 646 653 7036

healthcare@edisongroup.com

Edison profile page

CASI Pharmaceuticals is a research client of Edison Investment Research Limited

Evomela approved in China

On 3 December 2018, CASI announced that the NMPA had approved its priority review application for marketing of Evomela in China. This was the company's first attempt at independent approval and one of the first tests of the new priority review pathway in China by any company. Regional rights to Evomela in Greater China were originally licensed from Spectrum Pharmaceuticals in 2014 in a deal that also included Marqibo and Zevalin rights in exchange for 17% of CASI stock and a $1.5m promissory note.

Evomela is most commonly used as a conditioning agent prior to stem cell transplant in patients with multiple myeloma. To ensure that a patient's own diseased bone marrow is replaced with the transplanted tissue, prior to transplantation the patient is 'conditioned' either with radiation or a large dose of chemotherapy. The melphalan in Evomela is a nitrogen mustard chemotherapy that is commonly used as a conditioning agent. The innovative aspect of Evomela is that it contains the solubilizing agent Captisol (developed by Ligand Pharmaceuticals) to aid the dissolution of the drug in water. This avoids the use of propylene glycol used in other formulations that can cause adverse reactions. Spectrum had sales of $6.8m in Q318, which was down year-on-year (from $10.5m in Q317) due to pricing pressure.

The multiple myeloma market

Multiple myeloma, like other forms of hematologic cancers, is substantially less common in China (and other East Asian countries) than in the west. There are varying estimates of the epidemiology of the disease in China, but the most consistent estimates we have found based on reported cases indicate an age adjusted incidence of approximately one per 100,000. [1,2] However, this statistic masks the true burden of the disease. There are an estimated 17,000 new cases of multiple myeloma in China every year, which makes it the second largest geography of the disease after the US (~24,000). The burden of multiple myeloma has also grown dramatically across East Asia – 262% between 1990 and 2016 – driven by ageing populations, population growth and increases in age-specific incidence factors.[2]

A test of the priority review process

The priority review process was only recently established by the NMPA to encourage an increase in drug approvals. One of the factors that can qualify a drug for priority review is that it is not commercially available in China and is already approved overseas. Although generic melphalan is available elsewhere, there are no approvals in China, making Evomela the first formulation of the drug marketed in the country and therefore a candidate for priority review. Additionally, as part of these reforms, the government stipulated that under certain circumstances, a drug could be approved using purely foreign clinical trial data, without the need for confirmatory Chinese clinical trials. There was some uncertainly regarding this regulation, as the process stipulated that the 'existence of ethnic differences' be considered in the data. However, this approval stands as a testament to the regulators' flexibility in this regard. The pivotal study performed by Spectrum was a 61-patient Phase IIb with a single Asian patient. No additional data were necessary for Evomela's approval.

1 Globocan

2 Cowan AJ, et al. (2018) Global Burden of Multiple Myeloma A Systematic Analysis for the Global Burden of Disease Study 2016. *J Am Med Assoc Oncol* 4, 1221-1227.

Valuation

We have increased our valuation to $759m or $8.11 per basic share from of $754m or $8.06 per basic share. The change is associated with increasing the probability of success for Evomela from 90% to 100%. We have also slightly moved forward the commercialization timeline because we expected the NMDA decision in 2019. The change in valuation is small because a majority of the value of the asset was already priced in, in accordance with our high level of confidence. Our model only accounts for penetration into the urban population given better insurance coverage and financial means in this population (approximately 35%), although we may update our valuation in the future if further reforms improve the access to medical products in other population groups.

Exhibit 1: Valuation of CASI

Portfolio	Asset	Region	Peak sales ($m)	Margin	Clinical risk adjustment	Value ($m)
Spectrum	Evomela	China	15.5	46%	100%	26.26
	Marqibo	China	8.3	58%	90%	7.97
	Zevalin	China	23.9	64%	90%	47.00
Generics		China & US	249.7	49%	100%	578.17
Internal	ENMD-2076	China & US	25.2	51%	20%	1.43
Total						660.83
Net cash and equivalents (Q218) ($m)						98.53
Total firm value ($m)						759.36
Total shares (m)						93.59
Value per basic share ($)						8.11
Dilutive warrants and options (est.)						31.81
Value per diluted share ($)						6.81

Source: Edison Investment Research, CASI reports

Financials

Our financial projections have changed slightly to reflect the earlier than expected approval of Evomela. Our expected revenue for 2019 is $10.9m (up from $9.6m) to reflect this development, but the largest proportion of this revenue remains the generics portfolio. We believe the company's current assets are sufficient to bring it to profitability in 2021.

Exhibit 2: Financial summary

$'000s	2016	2017	2018e	2019e
31-December	US GAAP	US GAAP	US GAAP	US GAAP
INCOME STATEMENT				
Revenue	0.0	0.0	0.0	10,853.3
Cost of Sales	0.0	0.0	0.0	(3,046.0)
Gross Profit	0.0	0.0	0.0	7,807.3
EBITDA	(6,358.9)	(9,983.1)	(18,433.0)	(9,823.3)
Normalised operating profit	(6,425.4)	(10,100.9)	(18,733.2)	(14,332.0)
Amortisation of acquired intangibles	0.0	0.0	(1,291.8)	(1,388.8)
Exceptionals	0.0	0.0	(687.0)	0.0
Share-based payments	(2,995.2)	(650.4)	(5,222.8)	(5,222.8)
Reported operating profit	(9,420.6)	(10,751.3)	(25,934.7)	(20,943.6)
Net Interest	(26.1)	1.0	38.5	0.0
Joint ventures & associates (post tax)	0.0	0.0	0.0	0.0
Exceptionals	(6.8)	(19.9)	(67.3)	0.0
Profit Before Tax (norm)	(6,458.2)	(10,119.8)	(18,762.0)	(14,332.0)
Profit Before Tax (reported)	(9,453.5)	(10,770.2)	(25,963.5)	(20,943.6)
Reported tax	0.0	0.0	0.0	0.0
Profit After Tax (norm)	(6,458.2)	(10,119.8)	(18,762.0)	(14,332.0)
Profit After Tax (reported)	(9,453.5)	(10,770.2)	(25,963.5)	(20,943.6)
Minority interests	0.0	0.0	0.0	0.0
Discontinued operations	0.0	0.0	0.0	0.0
Net income (normalised)	(6,458.2)	(10,119.8)	(18,762.0)	(14,332.0)
Net income (reported)	(9,453.5)	(10,770.2)	(25,963.5)	(20,943.6)
Basic average number of shares outstanding (m)	56	62	83	95
EPS - basic normalised (c)	(11.56)	(16.45)	(22.61)	(15.01)
EPS - diluted normalised (c)	(11.56)	(16.45)	(22.61)	(15.01)
EPS - basic reported (c)	(16.92)	(17.51)	(31.29)	(21.94)
Dividend (c)	0.00	0.00	0.00	0.00
BALANCE SHEET				
Fixed Assets	264.1	1,288.5	39,535.4	33,953.0
Intangible Assets	0.0	0.0	16,763.2	15,374.4
Tangible Assets	229.6	1,046.5	22,543.7	18,350.2
Investments & other	34.5	242.0	228.4	228.4
Current Assets	27,448.8	43,812.4	72,641.3	59,825.0
Stocks	0.0	0.0	0.0	751.1
Debtors	0.0	0.0	0.0	1,784.1
Cash & cash equivalents	27,092.9	43,489.9	71,297.6	56,219.2
Other	355.9	322.5	1,343.7	1,343.7
Current Liabilities	(1,315.6)	(5,062.1)	(6,022.9)	(4,199.9)
Creditors	(1,064.6)	(4,316.1)	(3,722.7)	(3,398.9)
Tax and social security	0.0	0.0	0.0	0.0
Short term borrowings	0.0	0.0	(1,499.3)	0.0
Other	(251.0)	(746.0)	(801.0)	(801.0)
Long Term Liabilities	(5,613.5)	(1,498.8)	0.0	0.0
Long term borrowings	(1,491.3)	(1,498.8)	0.0	0.0
Other long term liabilities	(4,122.3)	0.0	0.0	0.0
Net Assets	20,783.8	38,540.1	106,153.7	89,647.6
Minority interests	0.0	0.0	0.0	0.0
Shareholders' equity	20,783.8	38,540.1	106,153.7	89,647.6
CASH FLOW				
Op Cash Flow before WC and tax	(6,358.9)	(9,983.1)	(18,433.0)	(9,823.3)
Working capital	348.0	3,572.4	(1,055.7)	(2,859.0)
Exceptional & other	(12.2)	8.5	44.6	0.0
Tax	0.0	0.0	0.0	0.0
Net operating cash flow	(6,023.1)	(6,402.2)	(19,444.0)	(12,682.2)
Capex	(64.8)	(934.7)	(21,861.1)	(315.2)
Acquisitions/disposals	0.0	0.0	(19,172.0)	0.0
Net interest	0.0	0.0	0.0	0.0
Equity financing	28,049.7	23,733.9	89,580.4	0.0
Dividends	0.0	0.0	0.0	0.0
Other	0.0	0.0	(117.2)	0.0
Net Cash Flow	21,961.8	16,397.0	28,986.2	(12,997.5)
Opening net debt/(cash)	(3,639.8)	(25,601.7)	(41,991.7)	(69,798.3)
FX	0.0	0.0	(1,178.5)	0.0
Other non-cash movements	0.0	(7.0)	(1.0)	0.0
Closing net debt/(cash)	(25,601.7)	(41,991.7)	(69,798.3)	(56,219.2)

Source: Edison Investment Research, CASI reports

General disclaimer and copyright

This report has been commissioned by CASI Pharmaceuticals and prepared and issued by Edison, in consideration of a fee payable by CASI Pharmaceuticals. Edison Investment Research standard fees are £49,500 pa for the production and broad dissemination of a detailed note (Outlook) following by regular (typically quarterly) update notes. Fees are paid upfront in cash without recourse. Edison may seek additional fees for the provision of roadshows and related IR services for the client but does not get remunerated for any investment banking services. We never take payment in stock, options or warrants for any of our services.

Accuracy of content: All information used in the publication of this report has been compiled from publicly available sources that are believed to be reliable, however we do not guarantee the accuracy or completeness of this report and have not sought for this information to be independently verified. Opinions contained in this report represent those of the Edison analyst at the time of publication. Forward-looking information or statements in this report contain information that is based on assumptions, forecasts of future results, estimates of amounts not yet determinable, and therefore involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of their subject matter to be materially different from current expectations.

Exclusion of Liability: To the fullest extent allowed by law, Edison shall not be liable for any direct, indirect or consequential losses, loss of profits, damages, costs or expenses incurred or suffered by you arising out or in connection with the access to, use of or reliance on any information contained on this note.

No personalised advice: The information that we provide should not be construed in any manner whatsoever as, personalised advice. Also, the information provided by us should not be construed by any subscriber or prospective subscriber as Edison's solicitation to effect, or attempt to effect, any transaction in a security. The securities described in the report may not be eligible for sale in all jurisdictions or to certain categories of investors.

Investment in securities mentioned: Edison has a restrictive policy relating to personal dealing and conflicts of interest. Edison Group does not conduct any investment business and, accordingly, does not itself hold any positions in the securities mentioned in this report. However, the respective directors, officers, employees and contractors of Edison may have a position in any or related securities mentioned in this report, subject to Edison's policies on personal dealing and conflicts of interest.

Copyright: Copyright 2018 Edison Investment Research Limited (Edison). All rights reserved FTSE International Limited ("FTSE") © FTSE 2018. "FTSE®" is a trade mark of the London Stock Exchange Group companies and is used by FTSE International Limited under license. All rights in the FTSE indices and/or FTSE ratings vest in FTSE and/or its licensors. Neither FTSE nor its licensors accept any liability for any errors or omissions in the FTSE indices and/or FTSE ratings or underlying data. No further distribution of FTSE Data is permitted without FTSE's express written consent.

Australia

Edison Investment Research Pty Ltd (Edison AU) is the Australian subsidiary of Edison. Edison AU is a Corporate Authorised Representative (1252501) of Myonlineadvisers Pty Ltd who holds an Australian Financial Services Licence (Number: 427484). This research is issued in Australia by Edison AU and any access to it, is intended only for "wholesale clients" within the meaning of the Corporations Act 2001 of Australia. Any advice given by Edison AU is general advice only and does not take into account your personal circumstances, needs or objectives. You should, before acting on this advice, consider the appropriateness of the advice, having regard to your objectives, financial situation and needs. If our advice relates to the acquisition, or possible acquisition, of a particular financial product you should read any relevant Product Disclosure Statement or like instrument.

New Zealand

The research in this document is intended for New Zealand resident professional financial advisers or brokers (for use in their roles as financial advisers or brokers) and habitual investors who are "wholesale clients" for the purpose of the Financial Advisers Act 2008 (FAA) (as described in sections 5(c) (1)(a), (b) and (c) of the FAA). This is not a solicitation or inducement to buy, sell, subscribe, or underwrite any securities mentioned or in the topic of this document. For the purpose of the FAA, the content of this report is of a general nature, is intended as a source of general information only and is not intended to constitute a recommendation or opinion in relation to acquiring or disposing (including refraining from acquiring or disposing) of securities. The distribution of this document is not a "personalised service" and, to the extent that it contains any financial advice, is intended only as a "class service" provided by Edison within the meaning of the FAA (i.e. without taking into account the particular financial situation or goals of any person). As such, it should not be relied upon in making an investment decision.

United Kingdom

Neither this document and associated email (together, the "Communication") constitutes or form part of any offer for sale or subscription of, or solicitation of any offer to buy or subscribe for, any securities, nor shall it or any part of it form the basis of, or be relied on in connection with, any contract or commitment whatsoever. Any decision to purchase shares in the Company in the proposed placing should be made solely on the basis of the information to be contained in the admission document to be published in connection therewith.

This Communication is being distributed in the United Kingdom and is directed only at (i) persons having professional experience in matters relating to investments, i.e. investment professionals within the meaning of Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the "FPO") (ii) high net-worth companies, unincorporated associations or other bodies within the meaning of Article 49 of the FPO and (iii) persons to whom it is otherwise lawful to distribute it. The investment or investment activity to which this document relates is available only to such persons. It is not intended that this document be distributed or passed on, directly or indirectly, to any other class of persons and in any event and under no circumstances should persons of any other description rely on or act upon the contents of this document (nor will such persons be able to purchase shares in the placing).

This Communication is being supplied to you solely for your information and may not be reproduced by, further distributed to or published in whole or in part by, any other person.

United States

The Investment Research is a publication distributed in the United States by Edison Investment Research, Inc. Edison Investment Research, Inc. is registered as an investment adviser with the Securities and Exchange Commission. Edison relies upon the "publishers' exclusion" from the definition of investment adviser under Section 202(a) (11) of the Investment Advisers Act of 1940 and corresponding state securities laws. This report is a bona fide publication of general and regular circulation offering impersonal investment-related advice, not tailored to a specific investment portfolio or the needs of current and/or prospective subscribers. As such, Edison does not offer or provide personal advice and the research provided is for informational purposes only. No mention of a particular security in this report constitutes a recommendation to buy, sell or hold that or any security, or that any particular security, portfolio of securities, transaction or investment strategy is suitable for any specific person.

Frankfurt +49 (0)69 78 8076 960
Schumannstrasse 34b
60325 Frankfurt
Germany

London +44 (0)20 3077 5700
280 High Holborn
London, WC1V 7EE
United Kingdom

New York +1 646 653 7026
295 Madison Avenue, 18th Floor
10017, New York
US

Sydney +61 (0)2 8249 8342
Level 4, Office 1205
95 Pitt Street, Sydney
NSW 2000, Australia